**Before the**
**Federal Communications Commission**
**Washington, D.C. 20554**

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|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Service Rules for the 698-746, 747-762 and 777-792 MHz Bands | ) | WT Docket No. 06-150 |
| | ) | |
| Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems | ) | CC Docket No. 94-102 |
| | ) | |
| Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones | ) | WT Docket No. 01-309 |
| | ) | |
| Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services | ) | WT Docket No. 03-264 |
| | ) | |
| Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules | ) | WT Docket No. 06-169 |
| | ) | |
| Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band | ) | PS Docket No. 06-229 |
| | ) | |
| Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010 | ) | WT Docket No. 96-86 |

# COMMENTS OF MOTOROLA, INC.

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## SUMMARY

Motorola supports the Commission's efforts to expeditiously resolve outstanding issues related to the 700 MHz spectrum that is being recovered as part of this nation's transition to Digital Television (DTV) technologies. For more than 10 years, that spectrum has been the source of great anticipation for its promise to facilitate the provision of new commercial and public safety services.

Most recently, the Commission has adopted several rules that will create greater certainty for 700 MHz Commercial Service licensees and provide for a more coherent operating environment. Motorola commends the Commission on these actions taken in the Report and Order of this proceeding, which will provide additional flexibility and options for consumers and will create more effective use of the 700 MHz spectrum designated for commercial services.

With respect to the proposals contained in the Further Notice of Proposed Rulemaking that affect the 700 MHz public safety allocation, Motorola shares the Commission's desire to ensure that our nation's first responders have available advanced and effective communications capabilities throughout the United States and supports the Commission's initiatives to foster greater reliance on private/public partnerships for the development and deployment of nationwide public safety broadband networks. The Commission's actions are both timely and necessary and have generated a number of innovative proposals that merit serious consideration.

However, the Commission should not lose track of the fact that all incidents are local and the most effective nationwide public safety network will be one that is developed and deployed with the needs of the local user in mind. Such an arrangement requires that the centralized governing body have flexibility to approve locally designed systems that are consistent with a nationwide interoperability framework.

Consistent with such an approach, Motorola urges the Commission to reconsider its tentative conclusion to prohibit wideband technologies within the public safety 700 MHz allocation. Wideband technologies provide a cost-effective data solution offering greater potential for early deployment by leveraging existing public safety infrastructure. This is especially important for deployments in areas where it may not make economic sense to deploy a broadband infrastructure, or where such broadband deployment would be delayed. Providing local agencies the option to deploy a system that meets local coverage and user requirements can provide, at a minimum, a transitional solution for many areas of the country as the nationwide network is built out. It also provides a safety net for public safety agencies if complications arise with the enormous task of deploying a public safety nationwide broadband network. Motorola also provides specific recommendations on ways to attain both interoperability and local choice.

Motorola believes that the Commission's expressed concerns about perpetuating balkanized public safety systems ignores the tremendous progress that states and local jurisdictions have achieved in creating systems that embody both operability and interoperability to meet their communications requirements. This trend toward large statewide systems capable of tying together responders at every level has been driven by the needs of the first responder community rather than regulatory mandate. Such an

approach provides a balance of control and coverage to effectively meet communications requirements at the local as well as state or regional level.

With regard to other issues, Motorola reiterates its support for the proposal to consolidate public safety narrowband channels to the upper portion of the 700 MHz public safety allocation and provides its analysis of the costs associated with reprogramming existing 700 MHz radios to conform to a new band plan. As fully explained herein, Motorola states that the costs associated with conforming Motorola products that are already operating at 700 MHz, or that are expected to be operational by the time consolidation occurs, is in the range of $10 million.

Motorola also provides its support for the Alternative Broadband Optimization Plan that would shift the public safety allocation downward by one megahertz to minimize potential incompatibilities with Canadian allocations.

The Commission seeks comment on the plan submitted by Frontline Wireless to require a commercial licensee to enter into a public/private partnership with the nationwide broadband public safety licensee to promote the development of a public safety broadband network. Should the Commission adopt the Frontline Wireless plan, or something similar, Motorola believes that it is crucial that public safety retain control over its spectrum, including how priority preemption is implemented, how specialized devices can be added to the system, and how the network is constructed. And, while Motorola questions the need for construction benchmarks designed on geographical benchmarks for traditional commercial carriers, it does support the use of geographical based requirements for licensees that would assume requirements similar to those proposed by Frontline Wireless. Such an obligation is consistent with current public safety design as evidenced by recent requests for proposals for the construction of wide-area public safety communications systems by states and local governments.

Finally, Motorola responds to the Commission's proposal to adopt the same power flux density (PFD) limits for public safety operations in the 700 MHz as apply to commercial operations in the band. Given the near proximity of public safety narrowband receivers, Motorola provides technical analysis that demonstrates that the proposed PFD value of 3 mw/$m^2$ could lead to interference overload and intermodulation interference problems. Motorola recommends an alternative PFD for public safety operations that is 10 dB lower, 300 mw/$m^2$.

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## COMMENTS OF MOTOROLA, INC.

Motorola, Inc. (Motorola) hereby submits these comments in response to the above-captioned Further Notice of Proposed Rulemaking on the use of the 700 MHz Commercial Services spectrum, the 700 MHz Guard Bands, and the 700 MHz Public

Safety spectrum.[1] In these comments, Motorola sets forth some foundational elements that are essential to the success of a public safety nationwide broadband network and, more generally, effective utilization of the public safety and commercial 700 MHz allocation. Also, in support of the Commission's proposal to consolidate the public safety narrowband channels into a contiguous spectrum block, Motorola provides an estimate of the costs and timeline necessary to do so in these comments.

## I. INTRODUCTION AND SUMMARY

Motorola is pleased that the Commission is moving forward to resolve outstanding issues related to the 700 MHz spectrum that is being recovered as part of this nation's transition to Digital Television (DTV) technologies. For more than 10 years now, this soon to be reclaimed spectrum has been the source of great anticipation for its promise to facilitate the provision of new commercial and public safety services. As such, the technical, operational, and licensing rules for the 700 MHz spectrum has generated much excitement and debate, forming a voluminous written record in several different rulemaking proceedings.

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[1] *In the Matter of Service Rules for the 698-746, 747-762 and 777-792 MHz Bands; Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones; Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services; Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, Report and Order and Further Notice of Proposed Rulemaking, WT Docket Nos. 06-150, 01-309, 03-264, 06-169, and 96-86, CC Docket No. 94-102, PS Docket No. 06-229 (rel. April 27, 2007) (hereinafter "FNPRM").

In its most recent decision document, the Commission adopted several rules that, in Motorola's opinion, will create greater certainty for 700 MHz Commercial Service licensees and provide for a more coherent operating environment. For example, Motorola supports the decision in the Report and Order to extend all license terms to February 17, 2019, which is 10 years from the end of the DTV transition. Also, by adopting a power spectral density (PSD) power limit, the Commission facilitated the deployment of wider bandwidth technologies on a technology neutral basis. Coupled with the proposal to permit higher operating powers in rural areas, the Commission facilitated commercial deployments in underserved areas. Further, the Commission enhanced the utility of the guard band spectrum by replacing the Guard Band Manager leasing regime with the spectrum leasing policies and rules adopted in the Secondary Markets proceeding, allowing Guard Band licensees to use their spectrum as wireless service providers. Motorola commends the Commission on each of these decisions, which will provide additional flexibility and options for consumers and will create more effective use of the 700 MHz spectrum designated for commercial services.

With respect to the 700 MHz public safety allocation, Motorola shares the Commission's desire to ensure that our nation's first responders have available advanced and effective communications capabilities throughout the United States. Motorola supports the Commission's initiatives to foster greater reliance on private/public partnerships for the development and deployment of nationwide public safety broadband networks. The Commission is correct in seeking solutions to ensure that public safety has broadband capacity whenever and wherever it needs it. The Commission's actions

are both timely and necessary and have generated a number of innovative proposals that merit serious consideration.

While considering these proposals, the Commission should not lose track of the fact that all incidents are local and the most effective nationwide public safety network will be one that is developed and deployed with the needs of the local user in mind. Such an arrangement requires that the centralized governing body have flexibility to approve locally designed systems that are consistent with a nationwide interoperability framework.[2]

To this end, Motorola believes the Commission must reconsider its tentative conclusion to prohibit wideband technologies within the public safety 700 MHz allocation. As Motorola more fully explains below, wideband technologies provide a cost-effective data solution offering greater potential for early deployment by leveraging existing public safety infrastructure. This is especially important for deployments in areas where it may not make economic sense to deploy a broadband infrastructure, or where such broadband deployment would be delayed.

Disasters and catastrophes can take many different forms and therefore require a diversity of communications tools. Public Safety cannot rely solely on the development of a single nationwide broadband network that will take considerable resources and time to construct throughout the country. At a minimum, providing local agencies the option to deploy a system that meets local coverage and user requirements can provide a transitional solution for many areas of the country as the nationwide network is built out. It also provides a safety net for public safety agencies if complications arise with the

[2] *See* Section IV, *infra,* for a discussion of an interoperability framework.

enormous task of deploying a public safety nationwide broadband network. Despite the significant amount of creative work done to date by the public safety community and industry, there are a number of basic operational, technical and business details that must be resolved for such a network to be successful and available for first responders.

Motorola has some 75 years of experience in partnering with public safety to implement wireless communications systems. Motorola's real-world experience in designing and implementing public safety systems provides insights into the complex and unique coverage, reliability and user experience requirements that must be addressed to provide effective communications for public safety. More than 15 states have chosen Motorola to implement statewide mission critical voice systems that comply with the open Project 25 public safety interoperability standard supported by multiple manufacturers. Another 17 states have deployed systems that leverage pre-standard P25 technologies with fully compliant P25 radios from multiple manufacturers.

These systems serve both the states and, in many cases, local jurisdictions as well. The state of Michigan's system, for example, incorporates over 200 sites and provides mission critical voice communications to the state and over 900 jurisdictions that have contracted with the state to use the system. This is but one example of how localities, states and regions have taken steps to provide systems that embody both operability and interoperability to meet their communications requirements. This trend toward large statewide systems capable of tying together responders at every level has been driven by the needs of the first responder community rather than regulatory mandate. Such an approach provides a balance of control and coverage to effectively meet communications requirements at the local as well as state or regional level.

Motorola supports a nationwide broadband network truly designed to meet the public safety requirements of multiple agencies in a variety of jurisdictions each with their own unique demographics. All incidents are local but, based upon their magnitude, may evolve to require regional, statewide or national responses. While plans for a nationwide broadband network fulfill a significant need, Motorola does not agree that states, regions and localities are "balkanized" and incapable of deploying interoperable networks on their own, or that a nationwide network should be the only solution to meet all of public safety's needs.

Motorola strongly believes that any public safety broadband network must be designed to satisfy the needs of local and state agencies and responders. The public safety broadband network must be adapted and influenced by local conditions and local needs. Otherwise, it risks becoming a federally mandated "white elephant" that could potentially stifle rather than advance public safety communications capabilities. The Commission must therefore provide for a governance model that not only encourages but demands local participation in the design and implementation of the network. This approach should allow for the use of both standards-based wideband and broadband technologies within the 700 MHz public safety allocation as local demand requires, while still ensuring that national broadband needs are not compromised.

## II. BAND PLAN RECOMMENDATIONS

The primary focus of the FNPRM is to consider changes on the arrangement of the spectrum blocks in the upper 700 MHz Commercial Services Band, whether certain performance requirements and bidding restrictions should be adopted for both upper and lower commercial bands, and to consider requirements that would facilitate deployment

of a public safety network. The Commission's goal in adopting rules should be to adopt reasonable performance requirements and licensing rules that promote efficient use of the spectrum, economic efficiency and competition. Motorola recommends that the Commission consolidate the public safety narrowband voice blocks to provide more efficient use of the spectrum and adopt an overall bandplan that helps resolve issues in the Canadian border area.

### A. The Commission Should Enhance The Ability Of Public Safety To Deploy Broadband Technologies By Consolidating The Public Safety Narrowband Channels.

In considering the appropriate band plans for the Upper 700 MHz band, the Commission must first render a decision on whether to adopt its proposal to consolidate the public safety narrowband channels at the upper end of the public safety spectrum blocks. Under existing rules, the 700 MHz public safety band plan separates two three-megahertz paired narrowband blocks by a contiguous block of six megahertz paired spectrum currently identified for wideband use. Over the past year, the Commission has proposed to allow broadband use of the spectrum currently reserved for wideband use and to consolidate the existing narrowband channels to the upper half of the 700 MHz public safety block.

Motorola supports consolidation of the narrowband channels as it would allow public safety to reduce its need for internal guard bands between disparate narrowband and broadband operations by half and thus results in more efficient use of the spectrum. This increases the amount of spectrum that public safety can deploy for either broadband or wideband operations. Furthermore, the original reason for splitting the narrowband

spectrum into two separate blocks will soon be moot.[3] Simply put, consolidation provides clear benefits and should be adopted provided that the costs associated with this change are understood and addressed.

Public safety licensees should not, however, bear the cost burden of the relocation. Such a burden would fall disproportionately on licensees that have lead the way in implementing 700 MHz systems necessary to meet critical communications requirements and would provide disincentives to future "early adopters" of new technologies. Although the Commission noted that it has "on occasion" required incumbents to fund their own relocations, the precedent cited by the Commission dates back more than 40 years. More recent precedent suggests that parties benefiting from the displacement of incumbent spectrum users should fund the transition.

Motorola notes that the supporters of the Broadband Optimization Band Plan have agreed to fund the consolidation if their conditions are satisfied relating to the future use of the 700 MHz guard band spectrum. Motorola supports this approach and commends these parties for supporting public safety. If the Commission decides that it cannot agree to the conditions for this financial support, then it should consider funding these costs from the adjacent band commercial licensees who will benefit from more effective use of their spectrum as a result of the consolidation. The costs expected to be borne by these

[3] The narrowband blocks were originally split so that some narrowband channels would overlap both TV channels 63/68 and 64/69, providing greater likelihood that at least a portion of the channels would be useable in additional areas of the country prior to TV clearing. However, full TV clearing is now mandated by law as of February 17, 2009. Maintaining the bifurcated narrowband blocks beyond that date has no benefit for public safety.

licensees must be clear prior to any auction so that they can be taken into consideration in valuing the spectrum license.

Moreover, the relocation should be dealt with in a manner similar to the relocation of Federal Government user in the AWS bands, where funds are being made available by private sector entities receiving spectrum so that agencies can effectuate their own move out of the band within a certain timeline.[4] This would be in contrast to the cumbersome approach now being used in the 800 MHz realignment proceeding, which relies on individual negotiations over the details of the cost of each system relocation and a negotiation and process oversight mechanism that itself imposes substantial additional cost.[5] Given the relatively small number of 700 MHz public safety licensees that will be affected by narrowband consolidation, the process here should be streamlined and less complicated than that being used in the 800 MHz band.

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[4] The National Telecommunications and Information Administration Organization Act, Pub. L. 102-538, 106 Stat. 3533 (1992), as amended by the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (NDAA-99), Pub. L. 105-261, 112 Stat. 1920 (1999), as codified at 47 U.S.C. § 923(g), amending the National Telecommunications and Information Administration Organization Act, Pub. L. 102-538, requires new non-Government licensees to reimburse Federal users for their relocation costs in the transfer of the 1710-1755 MHz band from Federal Government use to non-Government commercial use. *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, ¶48 (2003); *see Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems; Amendments to Parts 1, 2, 27 and 90 of the Commission's Rules to License Services in the 216-220MHz, 1390-1395MHz, 1427-1429MHz, 1429-1432MHz, 1432-1435MHz, 1670-1675MHz, and 2385-2390MHz Government Transfer Bands;* Forth Notice of Proposed Rulemaking, ET Docket No. 00-258, WT Docket No. 02-8, FCC 03-134, 33 CR 2105, ¶14 (2003).

[5] The latest information available publicly from the Transition Administrator's quarterly reports and supplements to the quarterly reports shows that $64.5M has been spent on process oversight alone. *See* 800 MHz Transition Administrator, LLC Quarterly Progress Report for the Quarter Ended December 31, 2006, App. 10, WT Docket No. 02-55 (February 19, 2007).

In comments previously submitted to the Commission, APCO estimated that 550,000 to 600,000 dual band radios capable of operating on both 800 MHz and 700 MHz frequencies were deployed at that time.[6] While there was minimal information on the actual operation of these radios, it was believed that, given the limited 700 MHz infrastructure deployed because of the continued presence of TV broadcast operations, the vast majority of deployed 800/700 MHz radio units were operating only in the 800 MHz band and had not yet been activated for actual operation at 700 MHz. However, these figures must be updated. Now that all major equipment vendors are shipping 700 MHz radios, Motorola estimates that the current number of deployed dual band radios that are capable of operating in both the 700 MHz and 800 MHz bands has grown to more than 800,000 units. By the end of 2008, Motorola estimates the total to exceed 1,000,000 units. This would represent approximately 50% of all deployed public safety radios that operate in the 800 MHz band. In addition, an increasing number of these dual band radios are actually operating on 700 MHz as public safety deploys more 700 MHz infrastructure.

Existing Motorola mobile and portable units that are capable of 700 MHz operation can be modified to conform to a new band plan through code plug programming and will not require any change in hardware or firmware. For units that are in the field but not yet operating at 700 MHz, there would be no incremental costs

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[6] Letter from Wanda McCarley, President, APCO International, Harlin R. McEwen, Chairman, IACP Communications & Technology Committee Communications Advisor, MCC, NSA, MCSA, and Alan Caldwell, Senior Advisor, Government Relations, International Association of Fire Chiefs to Catherine Seidel, Acting Chief, Wireless Telecommunications Bureau, Federal Communications Commission, WT Docket No. 98-96 (July 31, 2006).

incurred because code plug programming will need to be done in any event in order to activate the 700 MHz functionality.

Motorola estimates that the costs associated with reprogramming installed 700 MHz equipment, including mobiles, portables and base stations actually operating at 700 MHz now or targeted to operate by the time the band reconfiguration begins will be in the range of $10 million.[7] At this cost, the benefits of consolidation far outweigh the costs and Motorola therefore urges the Commission to adopt a plan to implement the reconfiguration, including a funding mechanism. While Motorola has tried to provide as accurate an estimate as possible of the costs of reconfiguration, the information available related to the extent of deployed equipment and the costs of retuning is imperfect. Accordingly, the funding mechanism should account for the actual costs incurred, which may be somewhat less than or somewhat more than this estimate. To help streamline the process, we recommend establishing benchmark funding levels to be used, unless extenuating circumstances require legitimate cost adjustments.

Motorola recommends that public safety work with its membership to provide a recommendation for a pool of money necessary to be set aside, similar to the AWS relocation, sufficient to cover any anticipated relocation costs and funded by the appropriate parties as determined by the Commission. Public Safety leadership should also work with licensees and venders to provide a recommendation for benchmark values for the cost of modifying actual equipment to implement the reconfiguration. Licensees

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[7] This estimate is based on the best information available to Motorola regarding the amount of 700 MHz infrastructure deployed or anticipated and associated mobile and portable radios. Motorola based this estimate on anticipated average costs for retuning infrastructure, portable and mobile units estimated to be actually operating on 700 MHz frequencies.

would then draw off of these funds to implement the reconfiguration. Costs in line with the baseline values could be automatically approved. Justification for costs in excess of the baseline would be reviewed.

The Commission also should define a timeline for the consolidation of the narrowband blocks. Motorola estimates that once the Commission locks down the specifics of the bandplan, it will take approximately 12 months to develop the revised code plug programming software and conduct the necessary testing to ensure that aspects of the radios other than the translation of the operating frequencies would not be affected. In parallel, the public safety CAPRAD database and programs used by the regional planning bodies to assign channels going forward must be modified and frequency translations of the regional plans must be completed. Also, the details of mechanisms to transfer money from the provider of the funds to the public safety agencies would need to be finalized.

Once the revised code plug programming software is available to public safety customers, the funding details are established, the CAPRAD programs and the regional plans have been modified, it would be prudent to allow at least 6 to 9 months to retune all the mobiles, portables and base stations then operating on 700 MHz. Therefore, if the Commission can lock down the bandplan in the June 2007 timeframe, a very aggressive deadline for consolidating the narrowband segments into a combined six megahertz paired block at the upper end of the public safety 700 MHz band would be February 17, 2009. This would also coincide with the full availability of the spectrum throughout the country. We note that to meet this date, the Commission must also provide a streamlined

mechanism for modification of the regional plans and any revisions needed to the state licenses.

### B. The Commission Should Adopt the Revised Broadband Optimization Plan to Enhance Cross-Border Interoperability Opportunities With Canada.

In its FNPRM, the Commission offered a variety of different band plan solutions for the Upper 700 MHz Commercial Services band that presented a variety of block sizes and geographic license area configurations. Essentially, the proposed band plans are variations of two basic themes: the first retains the existing 700 MHz guard band A block at its present location and combines the spectrum previously assigned to the 700 MHz guard band B block with the remaining commercial spectrum while the second relocates the A and B block guard bands to both sides of the public safety allocation.[8] In this second group of proposed band plans, the public safety allocation would shift downward by one megahertz. Otherwise, the essential differences are the bandwidth of the commercial spectrum blocks to be auctioned as well as the proposed service areas.

As the Commission noted in the FNPRM, consolidation of the public safety narrowband channels as discussed above would relocate all narrowband channels to operations on UHF-TV channels 64 and 69.[9] To date, the Canadian government has not agreed to clear broadcasters from channels 64 and 69, which clearly undermines cross-border interoperability. In a time where border safety and control is vital to the safety of the American and Canadian people, this situation must be corrected.

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8 *See FNPRM* at ¶¶ 182-206.

9 *FNPRM* at ¶¶ 188, 260.

Under the first group of band plan proposals, the public safety narrowband channels would reside on frequencies assigned to TV channels 64 and 69. As a "temporary solution" to Canadian allocation incompatibility, the Commission suggests allowing narrowband voice communications in the border areas to operate at the frequencies 769-770/799-800 MHz, which now occupy TV channels 63 and 68.[10] Motorola believes this to be a less than elegant solution and could ultimately reduce the amount of spectrum for data operations in border regions. Also, this temporary solution creates unnecessary costs for public safety entities in the border areas, who would likely be required to reprogram their radios twice – once to permit the temporary solution and then again, assuming Canada clears channels 64 and 69, to enable the permanent solution.

Motorola, therefore, supports the second group of Commission band proposals, which help resolve some of the potential interoperability problems at the border areas by relocating the A block guard band and shifting the commercial blocks downward to create a one megahertz band of narrowband spectrum that would be consistent with Canadian allocation actions. This facilitates public safety's use of the narrowband portion of its spectrum in and around the United States/Canada border by enabling public safety entities to use the cleared channels for cross-border communications on the same frequencies.[11]

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[10] *FNPRM* at ¶188.

[11] While some issues will remain due to adjacent channel broadcast use of channels 64 and 69 in Canada, Motorola believes that this bandplan will provide for more system deployments near the border.

## III. PUBLIC SAFETY TECHNOLOGY OPTIONS.

In the FNPRM, the Commission tentatively concluded that providing broadband spectrum for advanced public safety communications would best serve its goal of enabling first responders to protect life, health and property.[12] Further, the Commission tentatively concluded that it should repurpose spectrum previously designated for wideband use for broadband use only and prohibit wideband operations on a going forward basis.[13] The Commission based its tentative conclusion on unsupported statements. Despite all of the progress that public safety has made in implementing statewide and regional systems based on the P25 interoperability standard, it believes that providing public safety any flexibility will perpetuate a "balkanization of public safety spectrum licenses, networks, and technology development."[14] Motorola strongly disagrees with these tentative conclusions and instead urges the Commission to allow public safety entities greater flexibility and local involvement in the deployment of data technologies. As stated earlier, all incidents are local and every first responder is a local responder and any solution must meet local requirements. Local responders are in the best position to know what these requirements are. The Commission should recognize and support the many excellent examples of local, regional and statewide interoperability.[15]

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12 *FNPRM* at ¶253.

13 *FNPRM* at ¶253.

14 FNPRM at ¶253

15 As examples, the State of Michigan took the initiative to build out a P25 interoperable network of over 200 sites covering the entire state. Over 900 local agencies which also use the system are autonomous and interoperable; the Alaska Land Mobile Radio system is a statewide P25 system supporting state, local and Federal agencies with shared public safety and Federal spectrum; DHS Safecom program partnered with

The Commission should not disregard the public safety community's continued, unified support for wideband technologies. As noted by the Commission, the National Public Safety Telecommunications Council (NPSTC)[16] and the Association of Public-Safety Communications Officials International (APCO)[17] both agree that that the Commission should continue to allow public safety entities the flexibility to deploy either wideband or broadband solutions.[18] In addition to APCO and NPSTC, many other public safety entities and organizations, including regional planning committees (RPCs) that the

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agencies in Hampton Roads, VA to create the ORION system. Seven cities representing 85% of the population are on the Governance Board. ORION implements a regional interoperable 700 MHz system overlayed with existing individual 800 MHz systems; Broward County, FL implemented an IP based system enabling interoperability among 30 major communities in the county and with tri-county agencies representing 6 million people.

[16] NPSTC is a federation of organizations representing public safety telecommunications and its members include the American Association of State Highway and Transportation Officials, American Radio Relay League, American Red Cross, Association of Fish and Wildlife Agencies, Association of Public-Safety Communications Officials-International, Forestry Conservation Communications Association, International Association of Chiefs of Police, International Association of Emergency Managers, International Association of Fire Chiefs, International Municipal Signal Association, National Association of State Emergency Medical Services Officials, National Association of State Telecommunications Directors, National Association of State Foresters, and the National Association of State Telecommunications Directors.

[17] APCO has 16,000 members, most of whom are state or local government employees who manage and operate police, fire, emergency medical, highway maintenance, forestry conservation, disaster relief, homeland security and other public safety communications systems.

[18] *See* Comments of National Public Safety Telecommunications Council, PS Docket No. 06-229, WT Docket No. 96-98, at 6 (received Feb. 26, 2007) (stating that "[p]ublic safety input to [the 96-98] proceeding was clear that the Commission needs to provide the option to choose wideband or broadband solutions within the current 700 MHz data spectrum as requirements dictate" and "local officials need the discretion afforded by the regional planning process to use the current 700 MHz data segment for either broadband or wideband operations"); Comments of at APCO, PS Docket No. 06-229, WT Docket No. 96-98, at 2 (received Feb. 26, 2007) ("broadband is not the only solution for public safety data communications and it should not be pursued to the exclusion of less expensive and more easily deployable wideband systems").

Commission did not acknowledge support the flexibility provided by allowing both wideband and broadband technologies.[19] Given the clear position of public safety, the Commission should not limit public safety's ability to select the most suitable technology option, particularly given the lack of analysis provided to support its tentative conclusion.

Wideband technology provides a number of benefits for public safety entities and, in many circumstances, may represent the most cost effective solution for public safety. Wideband technology is designed to be deployed using the same transmitter locations as narrowband voice systems and to support the same coverage for narrowband voice and wideband data devices, which for voice systems is almost always defined as 95%+ geographic coverage. Furthermore, the same controllers and other network elements can be shared across wideband and newer digital voice narrowband systems. Broadband technologies, on the other hand, will require far greater infrastructure and will not leverage existing public safety radio system elements. As the Region 22 (Minnesota) Regional Planning Committee noted, "wideband technologies can provide a very large

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[19] *See, e.g.,* Comments of The Region 22 (Minnesota) Public Safety Regional Planning Committee, PS Docket No. 06-229, WT Docket No. 96-98, at 4 (received Feb. 23, 2007) ("MN-RPC believes it is absolutely essential to retain the concept of flexibility to permit RPCs with the ability to implement a combination of [wideband] 50-100-150 kHz and [broadband] 1.25+ MHz data channel aggregation in order to meet the full continuum of local and regional public safety needs.") The Region 22 (Minnesota) 700 MHz regional planning area encompasses the entire state of Minnesota, consisting of eighty-seven counties, and shares its northernmost border with the Canadian provinces of Manitoba and Ontario. *See also* Comments of the Region 24 (Missouri) 700 MHz Regional Planning Committee, RM-11348, at 4 (received Nov. 29, 2006) ("Region 24 feels that the public safety user community should be permitted to define its own needs, through usage and experience, over time and that regulatory flexibility should be provided to public safety users"); Comments of Region 39, Tennessee, 700 MHz Regional Planning Committee, PS Docket 06-229, WT Docket 96-86, at 2 (received Feb. 26, 2007)("[r]egion 39 would like to see a spectrum solution that involves a standards base for both wideband (50 KHz – 150 KHz) and broadband channels (above 1 MHz bandwidth"). Region 39 encompasses the entire state of Tennessee, consisting of 95 counties.

geographic coverage footprint, with cell edge performance characteristics comparable to broadband, for a fraction of the infrastructure development costs compared to broadband."[20] For rural areas, this is crucial because wireless broadband, which requires a very dense infrastructure to achieve acceptable geographic coverage, may simply not be economically feasible in non-urban areas.[21]

Without providing public safety some flexibility to deploy systems on a local basis and the option to chose wideband when it makes sense, the Commission risks leaving public safety without data capabilities in many areas for many years and, potentially, forever in areas of exceedingly low population density with no commercial appeal. Although there is a fundamental expectation in this proceeding that a nationwide broadband network for public safety users will be deployed, the path to actually achieving such a network is not fully determined. Even in the best case, such a network

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[20] Comments of The Region 22 (Minnesota) Public Safety Regional Planning Committee, PS Docket No. 06-229, WT Docket No. 96-98, at 4 (received Feb. 23, 2007); *see also* Comments of the City of Philadelphia, PS Docket No. 06-229, WT Docket No. 96-86, at 6-7 (received Feb. 26, 2007)("[w]ideband is far less expensive to deploy, based on cost per square mile of coverage, and sufficient for the applications [Philadelphia] users now contemplate (e.g. transmitting maps and information in the City's geographical information system to support emergency field operations) or expect to consider in the near future (e.g. transmission of biometric data on responders at the scene of an emergency in order to monitor physical condition and ensure timely assistance where needed)").

[21] Comments of The Region 22 (Minnesota) Public Safety Regional Planning Committee, PS Docket No. 06-229, WT Docket No. 96-98, at 4 (received Feb. 23, 2007). *See also* Comments of the State of California, PS Docket No. 06-229, WT Docket No. 96-86, at 3 (received Feb. 26, 2007)("[w]hile the State agrees that a broadband network is appropriate in populated areas where the number of public safety users and the amount of data traffic is likely to justify its construction, the State is unconvinced that such a network is either technologically or fiscally feasible in geographically large areas of California where the density of public safety users is relatively low").

is unlikely to cover all areas where public safety requires it, and deployment in some markets could be significantly delayed as the rollout is prioritized.[22]

Based on the year 2000 U.S. Census county population data, approximately 40% of the continental U.S. land area has fewer than 10 people per square mile. If Alaska were included in that equation, the number would rise to almost 50%. Similarly, approximately one fourth of the Continental U.S. land area has fewer than 5 people per square mile on a county-by-county basis. This percentage would increase substantially if Alaska is included. In addition, there could be portions of counties with these low population densities that are not even included in the above statistics because the average population density across a county exceed these values.

The Commission has been seeking ways for many years how to best facilitate and encourage coverage in rural areas absent the clear economic imperative for doing so. It is unclear how the economic incentives for rural deployment of commercial systems are significantly improved in the instant case, particularly for a broadband data system that requires relatively dense infrastructure deployment. Absent some additional funding mechanism, Motorola believes that the business realities create considerable uncertainty regarding the ability of a commercial service provider to meet public safety's requirements in rural areas. Yet public safety must respond and operate in these areas

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[22] Cyren Call estimated that it would take 10 years to build out 65 percent of the nation's land mass. *See* Comments of Cyren Call Communications Corp., PS Docket No. 06-229, WT Docket No. 96-98, at 17 (received Feb. 26, 2007). The Commission has proposed an 8-year build-out for 75 percent of the non-government owned or leased geographic areas for the 700 MHz Commercial Services spectrum. *See FNPRM* at ¶212. Assuming a commercial-public partnership, this leaves many areas without a solution during the interim build-out periods, not to mention one quarter of the non Federal government area with no solution for data communications after eight years.

and it is critical that public safety have communications to meet its needs. Given this uncertainty, it should be clear that locking public safety into a one size fits all solution is risky and could significantly impede the ability of public safety to achieve the coverage that it needs.

## IV. PROVIDING FOR LOCAL/REGIONAL USE WITH WIDEBAND/BROADBAND TECHNOLOGY OPTIONS WILL NOT IMPEDE INTEROPERABILITY

Allowing local public safety agencies the opportunity to deploy wideband data systems would not hinder efforts to deploy a nationwide, interoperable broadband network provided that the right framework is established. Commission concerns about nationwide interoperability and undermining a public safety broadband migration can be overcome through a requirement that would allow wideband technologies under local control to co-exist harmoniously with a nationwide public safety broadband network. Specifically, the Commission could require wideband devices to be interoperable with whatever standard is ultimately selected for public safety broadband interoperability. Because wideband technologies can be made to support broadband, manufacturers would then be able to develop the most suitable technology and provide interoperability in a variety of ways.

For example, devices could be made to include only the interoperability standard, to include multiple technologies including the nationwide broadband standard in a single handset, or to include a slot that would allow use of PCMCIA cards to support not only the nationwide broadband standard, but also a variety of other technologies. Assuming that a broadband standard for public safety is required in the 700 MHz band, the

Commission could adopt a rule requiring all public safety data devices to support that standard once it is adopted. Such a rule could read as follows:

> *90. xxx Beginning (one year after a nationwide public safety broadband network interoperability standard is selected by public safety and documented by the Commission), mobile and portable equipment certified for the 700 MHz data spectrum must demonstrate a mechanism to interoperate with the nationwide public safety broadband network. The following are safe-harbor mechanisms to meet this requirement:*
>
> *i. The device being certified operates using the nationwide public safety broadband interoperability standard; or*
>
> *ii. The device being certified operates with multiple protocols, including the nationwide public safety interoperability standard; or*
>
> *iii. The device being certified includes a slot either on the device or by way of an attached extension cable that supports use of a device compatible with the nationwide public safety broadband interoperability standard.*

This proposed rule is consistent with the precedent set in the 700 MHz narrowband spectrum for data devices. Section 90.547(a)(2) of the Commission's rules states that any data device operating in the 700 MHz narrowband spectrum must demonstrate interoperability with the Project 25 narrowband data standard.

In addition to interoperability options at the handset level, because both the wideband and broadband technologies have an IP backbone, connecting the infrastructure of the systems together is relatively straightforward. Motorola does not believe a Commission rule is necessary to ensure that capability. Motorola urges the Commission to consider these recommendations and adopt a more flexible approach to technology options that meets public safety needs for both operability and interoperability. As a rationale for its broadband-only decision, the Commission also cites leveraging advanced

commercial technologies and infrastructure to reduce costs and speed deployment.[23] While Motorola fully supports leveraging the economies of scale realized by commercial technologies that are deployed, the Commission must recognize that underlying technology costs are not necessarily the major cost incurred.

The end-user devices for public safety are, for the most part, highly specialized devices. The higher cost of public safety devices is not driven by the underlying air-interface technology, but by the specialized requirements for a ruggedized device that must operate for extended amounts of time in the harshest environments, while supporting specialized public safety applications. Examples of these cost drivers are readily apparent in other segments of the technology marketplace as well.[24] Furthermore, the perceived costs of commercial wireless devices is lower than the real costs because commercial operators routinely subsidize the price of a device in exchange for a certain guaranteed level of monthly service revenue for a minimum period of time. Public safety agencies already have the option to purchase commercial service using commercial grade devices. Regardless of the type of technology chosen, the views of local and state public safety must be represented as part of any data deployment.[25] It is crucial that the

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23 *FNPRM* at ¶253.

24 For example, consumer laptop computers commonly sell for under $1000 but a ruggedized version using the same basic underlying technology can cost more than 3 times than amount. *See e.g.*, http://www.buytough.com/tb_30.asp.

25 *See* Comments of the City of Philadelphia, PS Docket No. 06-229, WT Docket No. 96-86, at 3 (received Feb. 26, 2007)("[u]ltimately, local and regional agreement, and therefore local and regional control, is vital in establishing an effective public safety interoperability model"); Comments of Region 39, Tennessee, 700 MHz Regional Planning Committee, PS Docket 06-229, WT Docket 96-86, at 2 (received Feb. 26, 2007)("[r]egion 39 has great con[c]ern with a single nationwide licensee unless Public Safety has a "strong voice" so that not only large departments are represented but also the small rural departments").

coverage and timing of the deployed wideband/broadband technology meet the needs of local and state public safety entities. There are a variety of ways to ensure that this occurs consistent with the desire for deployment of a nationwide broadband network and the ability of the partner operator to fund the deployment under a rationale business plan.

Specifically, a portion of the data spectrum could be licensed to local entities while a portion of the data spectrum is licensed to a nationwide entity. Providing public safety with cost-effective technology options would allow deployment of systems that meet specific coverage requirements in a timely manner. In contrast, under the Commission's tentative conclusion, substantial areas of the country are likely to wait 8 to 10 years with no option for service during that time, and other areas may never be served if doing so does not meet a valid business plan. Accordingly, if rules are adopted to create a centralized public safety nationwide broadband network, Motorola recommends the following public safety bandplan, which enables both a nationwide broadband network and provisions for local/regional decisions, including the option to choose wideband or broadband technologies.[26]

**Sample 700 MHz Public Safety Bandplan**

| | | |
|---|---|---|
| Nationwide Broadband<br>3.50 – 3.75 MHz | Local & Regional<br>BB/WB<br>2.25 - 2.50 MHz | Narrowband<br>6 MHz |

This recommended bandplan makes provisions for both nationwide broadband operations, as well as local/regional operations with the choice to deploy the technology that best meets local public safety requirements and constraints. The decision to deploy

[26] This sample plan would allow a nationwide broadband licensee to deploy multiple LTE (Long Term Evolution) or EVDO channels while allowing local licensees to deploy either a single LTE or EVDO channel or a wide area wideband network.

local systems (either broadband or wideband) in the center portion of the band would be left to local users but would require coordination with the RPCs. The RPCs would also establish the size and location of any guardband needed to protect narrowband operations. This would vary depending on whether broadband or narrowband technologies were locally deployed. If the region chooses to deploy broadband technology, a one megahertz guardband would be placed between broadband and narrowband spectrum. On the other hand, if the region chooses to deploy wideband, a guardband of up to one megahertz would be placed between the broadband and wideband spectrum. In addition to providing for local/regional decisions and the deployment of the technology that best fits a region's operational requirements and constraints, the plan includes provisions for increased spectrum efficiency. While not usable in all cases, a portion of the guardband may be usable for wideband deployment, depending on the geographic spacing between adjacent wideband and broadband cells. The plan would provide the RPC the flexibility to determine the amount and location of the guardband, consistent with the goals of interference avoidance, thereby improving more effective spectrum use.

As another option, a nationwide public safety licensee could be structured in such a way as to have significant and meaningful input from local users and could allow the local entities to construct portions of the network in a manner consistent with the national structure. In any event, this flexibility can be offered without undermining the deployment of a nationwide broadband network.

Given the current business, regulatory and implementation uncertainty regarding the details of deploying a nationwide broadband network for public safety, the Commission should not unnecessarily foreclose technology or licensing options that may

provide valuable options for meeting public safety data requirements. The Commission should recognize the great strides that public safety has made to deploy statewide and regional networks and to solve interoperability problems. While there is still much progress to be made, it is unreasonable to severely limit public safety's options and technology choices as proposed in the tentative conclusion. Rather, the Commission should adopt a framework that ensures interoperability while still providing some flexibility to implement the most appropriate technology option and avenues to allow local entities to meet their coverage requirements consistent with a nationwide framework. It is simply not possible for the FCC to ensure that the billions of dollars needed to build the nationwide network is available, safe and sufficient and that the commercial business plan underwriting the shared network will be an unqualified success. Accordingly, the FCC should not foreclose other deployment options that would allow public safety to address their needs for high speed data communications.

## V. POWER SPECTRAL DENSITY.

In the Report and Order, the Commission modified the power limit rules for the Upper and Lower 700 MHz Commercial Services Band by implementing a power spectral density (PSD) model for defining power limits, permitting increased power in rural areas, and permitting radiated power levels to be measured on an average, rather than peak, basis.[27] The Commission determined that this action will permit higher power and increased flexibility for 700 MHz Commercial Services Band licensees implementing

[27] *See FNPRM* at ¶¶ 89-97, 266.

wider band technologies, with certain measures in place to protect against any possible increased interference, especially to 700 MHz public safety users.[28]

The Commission sought comment on whether it is appropriate to provide the same flexibility to the 700 MHz public safety broadband operations as that afforded to the 700 MHz Commercial Services Band licensees. Motorola believes that the Commission should adopt the same PSD limits for public safety as was adopted in the 700 MHz Commercial Services Band. In doing so, the Commission would provide a technical solution that would not discourage the use of commercial broadband technology. Additionally, using a PSD limit for public safety should provide better compatibility between public safety and commercial services because both would be operating under similar technical requirements, when appropriate.

In contrast, Motorola is concerned that the same power flux density (PFD) limits applied to commercial operations would be insufficient to protect some public safety narrowband services from public safety broadband services. PFD limits specify the level of power on the ground, which is the parameter most applicable to the presence or absence of near-far interference. While the Commission previously adopted a PFD limit of 3 mw/$m^2$ for commercial systems, the Further Notice seeks comments on "…whether the technical restrictions adopted today for the 700 MHz Commercial Services Band with respect to interference protection, if applied to public safety broadband spectrum, will protect adjacent band operations." [29]

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[28] *See FNPRM* at ¶266.

[29] *Id.* at ¶267.

The 3 mw/$m^2$ limit is relatively high even within the commercial bands. Motorola believes that even with the one megahertz guardband between broadband and narrowband public safety applications, such a limit is insufficient to prevent interference to public safety narrowband systems. The 700 MHz Technical Working Group's (TWG) analysis showed that broadband operations placed on the public safety broadband/narrowband spectrum in close proximity to the narrowband spectrum had the potential to cause near/far interference by itself, or in some cases by combining with strong commercial signals spaced farther away.[30] At that time, TWG assumed that Public Safety would have control over its own broadband spectrum allowing it to control the power levels on the ground through antenna site placement, choice of antenna height/patterns, or control of ERP levels in order to prevent interference. Given the characteristics of 700/800 MHz narrowband land mobile receivers, even with the interference mitigation techniques used in the 800 MHz band, PFD levels from the Public Safety broadband transmitters above 30 μw/$m^2$ (*i.e.,* 1/100$^{th}$ of the level allowed) have the potential to cause intermodulation interference to narrowband receivers in weak desired signal areas. In addition, PFD levels above 300 μw/$m^2$ have the potential to cause narrowband receivers to overload even in areas of strong desired narrowband signal levels.

Because of this increased potential for interference identified by the TWG, Motorola recommends adoption of a PFD limit of 300 μw/$m^2$ for deployments in the public safety broadband spectrum. This limit is 10 db lower level than that allowed for

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[30] *See generally* Comments of Access Spectrum, LLC, Columbia Capital III, LLC, Pegasus Communications Corporation and Telecom Ventures, WT Docket Nos. 06-150 and 01-309, CC Docket. No. 94-102 (Sept. 29, 2006).

deployments in the commercial blocks and will significantly reduce the potential for interference to public safety narrowband systems. We note that wideband operations would generally not cause the same potential for interference as they would normally be co-sited along with an agency's narrowband operations. Absent a sufficiently low limit to protect public safety operations, Motorola believes that coordination is necessary between public safety narrowband licensees, public safety broadband licensees and commercial operators to avoid interference to public safety narrowband operations.

## VI. THE FRONTLINE PROPOSAL AND PUBLIC SAFETY CONTROL.

Frontline has proposed that the Commission alter the upper portion of the band plan and service rules for the 700 MHz Commercial Services spectrum in order to auction a single, nationwide 10-megahertz (5 megahertz paired) license near the 700 MHz public safety spectrum.[31] This new block would support a broadband network specifically designed to serve more demanding public safety uses, as well as consumer traffic.[32]

Under the Frontline plan, the single nationwide licensee would have to accept commitments and abide by certain service rules set forth by the Commission.[33] The licensee would be responsible for managing and operating the public safety broadband network and would be required to provide priority access to public safety during emergencies.[34] Should the Commission adopt the Frontline plan, it is crucial that public safety retains control over its spectrum, including how priority preemption is

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31 *FNPRM* at ¶272.

32 *FNPRM* at ¶272.

33 *See* Comments of Frontline Wireless, LLC, PS Docket No. 06-229, WT Docket No. 96-98 (received Feb. 26, 2007).

34 *FNPRM* at ¶274.

implemented, how specialized devices can be added to the system, and how the network is constructed.

The Frontline proposal includes a provision that it would allow attachment of any device.[35] In its comments in response to the recent Skype petition, Motorola described certain problems that such an open requirement could cause to the network if devices are not properly tested to ensure compatibility with the network.[36] This is especially true for a public safety network that must have the highest level of reliability and where allowing attachment of devices that have not been fully and properly tested could harm the ability of public safety to get vital information at critical times. Accordingly, Motorola does not support a general requirement allowing attachment of any devices as proposed by Frontline.

However, to the extent that devices are intended for public safety use, Motorola believes that it is important for public safety, not a commercial carrier, to control which devices can be used, with appropriate steps to ensure that devices will not harm the network. Given the specialized nature of devices intended for public safety, Motorola does believe that providing greater flexibility for pubic safety to control which devices are attached to the network is manageable provided an adequate testing regime is put in place to ensure that the devices confirm to applicable standards and are compatible with the network. Thus, in adopting any proposal, the Commission should allow public safety to maintain control and attach a device of its choosing. Public safety devices are by definition specialized and normally deployed in small volumes *i.e*, tens of thousands at

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[35] Comments of Frontline Wireless, LLC, PS Docket No. 06-229, WT Docket No. 96-98, page 30 (received Feb. 26, 2007).

[36] Comments of Motorola, Inc., RM-11361 (received April 30, 2007).

most and not hundreds of millions of units like commercial wireless devices. Any required testing should be efficient and not add unnecessarily costly steps that would have to be passed on to the public safety users.

Moreover, if the Commission adopts Frontline's plan, public safety should not be required to use Frontline's network. While Motorola believes that public safety would likely choose to use a purpose-built network, like the one proposed by Frontline, public safety should not be precluded from using devices on other carriers' networks, an option they already have today, if they so choose.

Motorola also believes that there are additional foundational requirements that need to be addressed. For each of these, the Commission needs to determine the role of the commercial licensee designated to build out the public safety networks versus that of the national public safety broadband licensee, and adopt rules accordingly.

For example, public safety users today are accustomed to having control over the networks they use. If a network similar to that proposed by Frontline and previously proposed by Cyren Call that would serve both public safety and consumers is approved, the issue of who controls what is very relevant. While the network provider, *i.e*, the auction winner, certainly would expect to control major aspects of the network, public safety users will need control of operational features and functions, such as priority preemption.

The mixing of consumer and public safety traffic on the same network also requires special attention to access, security, liability and prioritization. This spans a myriad of issues, some already faced by commercial carriers and public safety respectively on their current individual networks and some that arise by virtue of the

network being shared. For example, Commission rules allow a commercial operator to approve deployment by customers of bidirectional amplifiers (BDA's) sometimes needed to boost the signal levels within buildings. However, there have been situations in which these amplifiers, even though properly designed, were not properly installed, which created self-oscillation and interference within the commercial network, sometimes over a relatively large number of cells. Given the presence of more critical public safety data traffic on a planned nationwide broadband network, public safety, the commercial auction winner and the Commission may need to agree on revised procedures and some type of coordination for deployment of BDA's.

The Commission may also need to determine the disposition of the adjacent commercial block of spectrum, in the event that for financial or other reasons, the auction winner determines it cannot sustain operations over the long term as originally planned and envisioned. Normally, the auction winner could transfer, partition or disaggregate its spectrum holdings to another commercial party. Providing service to public safety, however, may make this more complex, particularly if the system is built out in a number of areas and public safety is relying on the network for service. In the event of any default, we believe the national public safety licensee should have a significant role in determining the disposition of this spectrum, even though it is classed as commercial spectrum under the current law.

### A. Build-Out Requirements

If rules are adopted that designate a specific auction winner to build out a public safety nationwide broadband network, it is appropriate for the Commission to adopt different build out requirements than those that apply to unencumbered licenses.

Motorola believes the build-out recommendations for commercial licensees who will be assisting public safety to build out the national broadband network should be based on geographic rather than population coverage.

While these specialized commercial licensees are likely to face similar economic realities as general commercial licensees, they will also be charged with serving a more demanding set of customers whose communications requirements are different than those of the general public. The inability to know ahead of time whether an emergency will happen near people, or in remote areas within a populated county, requires public safety to have almost universal coverage. The requirement to cover 95+% of the entire geographic area of a jurisdiction has appeared in almost every Request for Proposal public safety agencies have issued over the last 10 years.

A typical county or state has pockets of population and wide areas of very low density. The coverage requirements found in almost all requests for proposals (RFPs) for public safety systems are based on covering a very high percentage of the entire jurisdictional area. Most RFPs addressing data also specify a minimum data rate that the system must meet over a specified portion of the area, not just in close proximity to the antenna site. Following are some typical examples excerpted from actual RFP's:

1. A recent state wide RFP for Mississippi required "97% mobile coverage" over the "geopolitical boundaries of the State" throughout the duration of the negotiated contract. Furthermore, 97 % mobile area coverage reliability (ACR) is specifically referenced as defined by Technical Services Bulletin published by the Telecommunications Industry Association (TSB)-88B or its most recent version.
2. A recent RFP from Gwinnett County, Georgia indicated: "Firm shall provide both talk-out and talkback RF communication propagation predictions at 95% area reliability. Firm shall provide propagation predictions that show where mobile data performances are 96 kbps or greater at 95% area reliability.

Attempted data transmissions must be successful 95% of the time using a maximum of three automatic retransmissions."

3. A recent RFI from Washington, DC indicated: "The National Capital Region consists of 19 jurisdictions; the District of Columbia, the City of Alexandra, and the surrounding counties of Arlington, Fairfax, Loudon, Montgomery, Prince George's, Prince William, and enclosed city governments…The objective is for a area coverage reliability of 95% for the National Capital Region, …at the data rates described in the following sub-sections."

For the public safety nationwide broadband network to successfully meet the needs of public safety it must meet these types of geographic coverage. Also, a jurisdiction's coverage requirements are not always based on the average population coverage. For example San Bernardino County, CA has built out voice coverage in areas with virtually no permanent population because of the need for law enforcement to respond to incidents in those areas. Public safety has been able to build systems that meet the requirement to serve areas not generally served by commercial providers and the Commission should allow the option for public safety to construct its own network to meet these needs in the event the commercial licensee is unable to meet public safety requirements.

Public safety's long term needs are likely to require that the nationwide public safety broadband network cover agencies' entire geopolitical areas. In the event the auction winner responsible for building the public safety nationwide broadband network is not financially motivated to build out into rural areas, public safety agencies should not be penalized by having no 700 MHz spectrum to cover these areas, as would be the case under the Commission's tentative conclusion. Motorola's proposal for identifying some spectrum for local/regional buildouts will help resolve this concern for communities that are under-served either near-term or long-term.

## VII. BUILD-OUT REQUIREMENTS IN COMMERCIAL BLOCKS AND AUCTION ELIGIBILITY.

For the 700 MHz Commercial Services Band licenses that are not earmarked for public safety use, the Commission proposes to use performance requirements based on geographic benchmarks and a "keep what you use" rule.[37] Under the proposed rules, each licensee would have to cover a certain percentage of the geographic area of the license within a certain number of years. If a licensee failed to meet these interim requirements to cover a minimum percentage, the licensee would be required to return a certain portion of the unserved area to the Commission, reducing the license to meet the benchmark requirement.[38] Furthermore, the Commission sought comment on whether it could apply the "keep what you use" rule at the end of the license term, regardless of the level of construction by the licensee.[39]

Motorola believes that population-based, rather than geographic-based, build-out requirements are more appropriate for traditional commercial licenses. Population-based benchmarks make more economic sense for commercial licensees, who must take into account the high costs and low return of building out very sparsely populated areas. If geographic benchmarks are imposed on the 700 MHz commercial services spectrum, carriers may be forced to build out areas that potentially have few or no potential customers. Such a requirement may discourage both incumbent and new licensees from bidding on the spectrum, as every commercial licensee must consider the economic realities associated with geographic-based benchmarks.

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37 *FNPRM* at ¶¶ 212, 214-215.

38 *FNPRM* at ¶212.

39 *FNPRM* at ¶215.

Motorola also believes that the FCC should allow these traditional 700 MHz Commercial Service licensees to keep the entire license area if they meet their final build out requirements. While Motorola supports the goal of encouraging deployment in rural areas, forcing licensees to build in areas where it is uneconomic to do so will not further this goal, it will merely create uncertainty for licensees and could raise the cost of service for consumers. The Commission's secondary markets rules and procedures are sufficient to eliminate any potential for waste. If there is a commercial market to serve areas not yet built out by the licensee, rational economic behavior would suggest that commercial licensees will respond, either themselves or through leasing their excess capacity, to meet the void. If however, there is no market to serve, taking the spectrum away from the original licensee will not alleviate the issue. The Commission already has the mechanisms in place to ensure that if spectrum has value to a user and can be "used," it will be. The suggested "keep what you use" policy creates uncertainty, may chill the auction process, and is not necessary given the competitive nature of the commercial market.

The Commission also sought comment on excluding incumbent local exchange carriers, incumbent cable operators and large wireless carriers from eligibility for licenses in the 700 MHz Commercial Services spectrum in order to encourage entry of new competitors.[40] Motorola opposes placing any restrictions on the traditional commercial licenses that would prevent incumbents from bidding or holding a license. True broadband capability and multi-functional services at consumer-friendly rates can be delivered through large-scale, integrated networks. One solution is to use several

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[40] *FNPRM* at ¶221.

spectrum allocations to satisfy the growing needs of the consumer. Limiting the ability of incumbents to deliver integrated services would be limiting choice for consumers and restricting the potential growth of wireless broadband.

The Commission has consistently found the wireless industry to be highly competitive.[41] Given the vibrancy of competition in the general commercial wireless market, there is no reason to exclude incumbents from the auction. Moreover, the Commission has obligations to use the monies from the auction to fund several programs earmarked by Congress. Artificially restricting who can participate in the auction may negatively affect the FCC's ability to fulfill these obligations.

## VIII. CONCLUSION.

Based on its recent emphasis and attention, it is clear that ensuring effective public safety communications is the Commission's top priority. Motorola commends the Commission's focus and supports many of its goals, primarily to ensure that America's first responders have access to state-of-the-art data communications whenever and wherever it's needed. Motorola is concerned, however, that a single nationwide broadband solution will not fully achieve this goal if it precludes cost-effective solutions that can be implemented at the local level in a more timely fashion. Motorola believes that such systems should be supported and can be implemented in a coordinated fashion to avoid impeding the development of the broadband network. Motorola urges the FCC

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41 *See, e.g., Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Eleventh Report, WT Docket No. 06-17, 21 FCC Rcd 10947 (2006).

to accommodate such systems in its final rules for public safety use of the 700 MHz band.

Motorola also urges the Commission to effectuate the consolidation of the public safety narrowband channels and to find the appropriate funding source for the approximately $10 million needed to reprogram deployed systems. The Commission should adopt the Alternative Broadband Optimization Plan partly because its proponents have committed to funding the costs of consolidation and partly because the resulting spectrum realignment will improve cross-border operations and interoperability.

These actions, coupled with the decisions, actions and proposals regarding the use of the 700 MHz Commercial Spectrum, the Commission will establish a strong foundation that will allow the 700 MHz band to provide tremendous benefits to the economy and to the American people.

Respectfully Submitted,

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